EB-2016-0160
Hydro One Transmission Revenue Requirements 2017 and 2018
HQ Energy Marketing Submissions

ONTARIO ENERGY BOARD

IN THE MATTER OF Hydro One Networks Inc.
Transmission ("**Hydro One**")

AND IN THE MATTER OF an Application by Hydro One for electricity transmission revenue requirement and related changes to the Uniform Transmission Rates beginning January 1, 2017 and January 1, 2018.

SUBMISSIONS OF

HQ ENERGY MARKETING INC. ("HQEM")

Issue I.31

I. EXPORT TRANSMISSION SERVICE RATES

31. Is the Export Transmission Rate of $1.85 and the resulting ETS revenues appropriate?

Summary of HQEM's Position on Issue I.31

1. Export Transmission Service ("**ETS**") rates are charged to customers using the transmission system to export and wheel-through transactions at the point of interconnection with neighbouring markets. The Independent Electricity System Operator ("**IESO**") collects and remits the ETS revenue on a monthly basis to Hydro One as a revenue offset used to reduce transmission rates paid by domestic customers.[1]

2. In Hydro One's pre-filed evidence in this proceeding, Hydro One correctly describes the various aspect of the ETS rate and proposes to maintain the currently settled value of $1.85/MWh for the ETS rate throughout 2017 and 2018.[2]

3. During the oral hearing, no party asked Hydro One any questions with respect to the ETS issue, and Hydro One's Argument-in-Chief did not refer to the ETS issue.

4. The OEB Staff Submission does not specifically refer to the ETS issue, and the Staff Submission states, "If a specific issue is not mentioned, staff has no concerns with Hydro One's proposal and has no submissions on that issue."[3]

5. HQEM supports Hydro One's proposal that the ETS rate should be maintained at the currently settled value of $1.85/MWh through the 2017 and 2018 period.

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[1] EB-2012-0031, at page 2.
[2] Hydro One's pre-filed evidence, Exhibit H1, Tab 4, Schedule 1, page 2
[3] OEB Staff Submission, page 1

Regulatory History of the ETS Rate

6. In 1999, when Ontario's electricity market opened, the Board set an ETS rate of $1.00/MWh as a "placeholder" with the acknowledgment that the rate was "not the product of an objective, principled or pragmatic study."[4]

7. The Board next considered changes to the ETS rate in 2010 as part of its decision concerning Hydro One's 2011 and 2012 Transmission Rates; in EB-2010-0002 the Board decided to increase the rate to $2.00/MWh even though the Board acknowledged that there was very little analytical support for that rate, and the Board concluded that, "…the most pressing requirement is that a genuinely comprehensive study be undertaken to identify a range of proposed rates and the pros and cons associated with each proposed rate in time for the next transmission rate application." The Board directed the IESO to undertake this comprehensive study.[5]

Hydro One's 2013/2014 Transmission Rate Application

8. The issue of the ETS rate was fully argued before the Board as part of Hydro One's 2013/2014 Transmission Rate Application (EB-2012-0031):

   (a) The IESO engaged Charles River Associates ("**CRA**") to perform a study that was filed as part of the evidence in EB-2012-0031. CRA analyzed the impact of five ETS rate options on Ontario consumers, producers and the Ontario Market as a whole by estimating the impacts on consumer welfare, producer welfare (more commonly referred to throughout the proceeding as "consumer surplus" and "producer surplus") and Intertie Congestion Revenue. In aggregate, CRA indicated that these three elements provide a measure of "total welfare" or "total surplus" to Ontario as a whole. The CRA Study also assessed the impact of each option on the frequency and duration of surplus baseload generation. CRA did

[4] RP-2009-0044, page 66, as quoted in EB-2012-0031, at page 2.
[5] EB-2010-0002, at page 75.

not attach any weighting or preferences to the criteria or provide a recommendation on the most appropriate ETS rate.[6]

(b) The Association of Power Producers of Ontario ("**APPrO**") and HQEM each filed expert evidence in response to the CRA Study. APPrO retained Navigant Economics ("**Navigant**") which filed a report outlining the shortcomings of the quantitative analysis component of the CRA Study. Navigant argued for the lowering or elimination of the ETS rate. HQEM engaged Elenchus Research Associates ("**Elenchus**") to assess how the ETS rate should be set. Elenchus concluded that it would be inappropriate for the Board to establish an ETS rate in the absence of a proper cost allocation study. Elenchus recommended applying the principle of cost causality to determine the ETS rate and suggested that it could be achieved by creating a separate rate class for exporters.[7]

(c) The experts testified during an oral hearing on February 25 and 26, 2013 as a concurrent witness panel, and the Board then received submissions from IESO, HQEM, APPrO, the Association of Major Power Consumers in Ontario ("AMPCO"), the Consumers Council of Canada ("CCC"), Canadian Manufacturers and Exporters ("CME"), Energy Probe, the School Energy Coalition ("SEC"), the Vulnerable Energy Consumers Coalition ("VECC"), the London Property Management Association ("LPMA"), the Power Workers Union ("PWU") and Board staff.[8]

9. In EB-2012-0031, VECC, SEC and CCC submitted that the service offered to export customers is fundamentally the same as that offered to domestic customers. VECC and SEC raised the "user pay" argument which, from a "fairness" perspective, would require the user of an asset to contribute towards its costs. APPrO and HQEM submitted the contrary view that export customers are treated differently than domestic customers

[6] As summarized by the Board in EB-2012-0031, page 3.
[7] As summarized by the Board in EB-2012-0031, page 3 - 4
[8] As summarized by the Board in EB-2012-0031, page 4

because the Ontario transmission system was designed and built to serve domestic load; export customers use only excess capacity and therefore impose no incremental cost. APPrO and HQEM argued that the IESO largely operates the Ontario transmission grid in a way that benefits domestic loads over exports. For example, export customers in Ontario, unlike exporters in other jurisdictions, can be curtailed and are unable to participate in capacity markets of neighbouring jurisdictions. APPrO and HQEM submitted that export service should be viewed as interruptible service when setting appropriate rates.[9]

10. After considering the evidence and the submission of the various stakeholders, the Board made the following findings in EB-2012-0031:

(a) "The Board will not increase the ETS rate to $5.80/MWh for three reasons**. First, whether curtailments originate from generation issues or transmission issues, the Board agrees that export service does not receive the same priority access as domestic service. The Board accepts that the market rules treat exporters more as an interruptible load.** This difference in treatment related to generation capacity has consequences for the overall service, even if export transmissions rights are technically as firm as domestic transmission rights. **As a result, the Board finds that it may be appropriate for the export service to be viewed as a separate class**. **Second, absent a cost allocation study, the degree to which the differences in service should be reflected in a rate differential is unknown**. **There is simply no clear evidence in this proceeding as to the costs caused by export customers in Ontario**. Third, increasing the ETS rate from $2.00/MWh to the current Equivalent Average Network Charge of $5.80/MWh in one step would represent an unacceptable increase in the rate paid by exporters."[10]

(b) "**The Board finds that absent an analysis of cost causality (through a cost allocation study), there is insufficient basis for the Board to conclude that any change to the ETS rate is just and reasonable.** The Board concludes, therefore, that the rate should remain unchanged."[11]

(emphasis added)

[9] EB-2012-0031, page 5
[10] EB-2012-0031, page 5
[11] EB-2012-0031, page 9

11. Based on these findings, the Board ordered the continuation of the ETS rate at $2.00/MWh and ordered Hydro One to "prepare a cost allocation study involving the network assets utilized by export transmission customers and report the results of this study, including a proposal of the appropriate cost based ETS rate with supporting rationale, to the Board at its next transmission rates application".[12]

Hydro One's 2015/2016 Transmission Rate Application

12. As a part of Hydro One's 2015/2016 Transmission Rate Application (EB-2014-0140), Hydro One engaged Elenchus to perform a cost allocation study (the "**2014 Elenchus Cost Study**") of network assets utilized by export transmission customers to determine the ETS rate based on cost causality principles. Elenchus' recommended that the cost allocation methodology to be used to develop the ETS rate should be based on[13]:

- "Using the last year of actual hourly data for domestic and export customers. Forecast domestic and export hourly data is not available either from HONI or IESO."
- "12 CP should be the allocator used in apportioning assets between domestic and export customers in order to develop composite allocators to allocate shared expenses." (12 CP is the average of the demand for each customer class at the hour of each month's maximum system demand.[14])
- "Only dedicated assets used to serve export customers and related expense should be allocated to the export customer class."
- "No asset related costs associated with shared assets should be allocated to export customer." (Elenchus made this recommendation because export is considered to be interruptible service [as determined by the Board in EB-2012-0031], and Hydro One's transmission planning is only based on the capacity needs of domestic customers.)[15]

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[12] EB-2012-0031, page 10

[13] Hydro One's pre-filed evidence, Exhibit H1, Tab 4, Schedule 1, page 1 – 2; and the 2014 Elenchus Cost Study, being the Export Transmission Service Rate, Cost Allocation Methodology, May 7, 2014, (filed in EB-2014-0140 as attachment 1 to Exhibit H1, tab 5), at page 3 and 22-23, included in the Appendix hereto.

[14] The 2014 Elenchus Cost Study, *supra,* included in the Appendix, at page 12

[15] The 2014 Elenchus Cost Study, *supra,* included in the Appendix, at page 12

- "Expenses related to the use of shared assets should be allocated to export customers using composite assets as allocator."
- "No External revenues should be allocated to the export customer class," (because external revenues are the result of using Hydro One's assets which have been designed to serve domestic customers)[16], and
- "The ETS rate should be based on HONI's OEB approved Network revenue requirement, as used in determining the Uniform Transmission rate, marked up to include other transmitters' approved revenue requirement as reflected in the Uniform Transmission Rates."

13. Based on its proposed cost allocation methodology, and based on Hydro One's proposed 2015 and 2016 financial data, Elenchus recommended an ETS rate of $1.70/MWh be implemented for 2015 and that the ETS rate be maintained for at least 2 years to provide stability in determining the rate.[17]

14. During the discussions for a Settlement Agreement, Hydro One proposed to adopt an ETS rate of $1.70/MWh for 2015 and 2016. However, for purposes of reaching a settlement, all parties agreed to an ETS rate of $1.85/MWh which was the mid-point between the current ETS rate of $2.00/MWh and the Elenchus recommended rate of $1.70/MWh.

15. The Board approved an ETS rate change from $2.00/MWh to $1.85/MWh, effective January 1, 2015 for two years, based upon the Settlement Agreement in EB-2014-0140, which was informed by the analysis on cost causality for export service in the 2014 Elenchus Cost Study.[18]

[16] The 2014 Elenchus Cost Study, supra, included in the Appendix, at page 11
[17] The 2014 Elenchus Cost Study, supra, included in the Appendix, at page 23
[18] Hydro One's pre-filed evidence, Exhibit H1, Tab 4, Schedule 1, page 2

Importance of the Cost Causality Principle

16. In EB-2012-0031, after a comprehensive hearing to deal with the ETS issue, the Board determined that there was an insufficient basis for the Board to change the ETS rate unless there was an an analysis of cost causality through a cost allocation study. This finding was in keeping with the Board's policy that cost causality is to be an overarching rate making principle. [19]

17. The importance of cost causality, and rate making based on cost allocation, to the Board's determination of just and reasonable rates was emphasized in EB-2007-0667, the *Report of the Board: Application of Cost Allocation for Electricity Distributors* (the "**2007 Report**"), in which the Board stated:

> The establishment of specific revenue requirements through cost causality determinations is a fundamental rate-making principle. Cost allocation is key to implementing that principle. Cost allocation policies reasonably allocate the costs of providing service to various classes of consumers and, as such, provide an important reference for establishing rates that are just and reasonable.[20]

18. The situation in this proceeding is similar to the situation that was existing at the time of Board's decision in EB-2012-0031 in that there is no up-to-date analysis of cost causality through a cost allocation study, and HQEM submits that the Board should decide, as it did in EB-2012-0031, that there is an insufficient basis for the Board to change the ETS rate.

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[19] In EB-2010-0219, at p. 35, the Board described cost causality as an overarching principle that should be applied regardless of whether a rate class can be considered legacy or not.

[20] EB-2007-0667, at p. 2.

19. The current ETS rate of $1.85/MWh is higher than the rate of $1.70/MWh that Elenchus recommended be implemented for 2015-2016 in the 2014 Elenchus Cost Study, and there is no evidence to indicate that the current rate does not reflect cost causality.

20. None of the parties provided any evidence that the current ETS rate of $1.85/MWh is an unjust or an unreasonable rate.

21. Accordingly, HQEM submits:

    (i) there is no reasonable basis for the Board to conclude that it would be just and reasonable to increase the ETS rate at this time, and

    (ii) consistent with the Board's decision in EB-2012-0031, the ETS rate should be maintained at the current rate of $1.85/MWh until such time as there is an up-to-date cost allocation study which indicates that the current rate is no longer just and reasonable.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

Hélène Cossette
Avocate - Affaires juridiques
Hydro-Québec Direction Production et Équipement
4e étage, 75, boul. René-Lévesque Ouest
Montréal (Québec) H2Z 1A4

Téléphone: 514 289-3146
E-mail: Cossette.Helene@hydro.qc.ca

2014 Elenchus Cost Study, being the

Export Transmission Service Rate,

Cost Allocation Methodology,

dated: May 7, 2014

(filed in EB-2014-0140 as attachment 1 to Exhibit H1, tab 5)

2014-06-27
Exhibit H1-5-1
Attachment 1

34 King Street East, Suite 600
Toronto, Ontario, M5C 2X8
elenchus.ca

Export Transmission Service Rate

Cost Allocation Methodology

Report Prepared by
Michael Roger
Elenchus Research Associates Inc.

On Behalf of HONI

May 7, 2014

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EXECUTIVE SUMMARY

This report presents Elenchus' recommendation on the cost allocation methodology that should be used to determine a cost-based Export Transmission Service rate in Ontario.

The recommended methodology should be based on:

- Using prior year actual hourly data for domestic and export customers,
- 12 CP should be the allocator used in apportioning assets between domestic and export customers in order to develop composite allocators to allocate shared OM&A expenses,
- Only dedicated assets used to serve export customers and the related costs should be allocated to the export customer class,
- OM&A expenses related to the use of shared assets should be allocated to export customers using composite assets as allocator,
- No external revenues should be allocated to the export customer class,
- The ETS rate should be based on HONI's OEB approved Network revenue requirement, as used in determining the Uniform Transmission Rates, marked-up to include other transmitters' approved revenue requirement as reflected in the Uniform Transmission Rates.

The proposed cost allocation methodology determines the ETS rate based on cost causality principles. Given the range of values calculated using 2013, 2015, 2016 data in the proposed methodology and the related scenario sensitivity results, a value between $1.7/MWh and $1.8/MWh for the ETS rate can be considered to be cost-based.

Based on the proposed 2015 and 2016 HONI financial data, Elenchus recommends an ETS rate of $1.7 MWh be implemented for 2015 and that the ETS rate be maintained for at least 2 years to provide stability in determining the rate.

1 INTRODUCTION

Hydro One Networks Inc. ("HONI") retained Michael Roger of Elenchus Research Associates Inc. in order to develop a cost-based methodology to establish the Export Transmission Service ("ETS") rate.

In its Decision with Reasons dated June 6, 2013 on 2013 Export Transmission Service rates, (EB-2012-0031, Decision and Order, page 10), the Ontario Energy Board ("OEB") directed HONI to include a proposal of the appropriate cost-based ETS rate, with supporting rationale, to the OEB at its next transmission rates application.

More specifically the OEB stated on page 9 of its Decision with Reasons in Proceeding EB-2012-0031 that:

> *"The Board will require Hydro One to perform a cost allocation study to establish a cost basis for the ETS rate. Some parties have suggested that such a study would be prohibitively costly. However, the Board accepts the Elenchus testimony that a study could be properly scaled to address the magnitude of the issue and could be completed for a reasonable cost. The Board expects that this study will be completed in time for Hydro One's next cost of service transmission rate application. While Hydro One has the responsibility for completing this study, the Board expects that the IESO will assist Hydro One as required to fully address the ETS rate issue."*

This report presents the results of the cost-based methodology developed by Elenchus to establish the ETS rate.

This report is divided into 5 main sections. Section 2 provides a background on the evolution of the ETS rate from market opening in 2002 until now, section 3 presents the principles of cost allocation methodology, section 4 describes the proposed cost allocation methodology to determine the ETS rate, section 5 presents the results of applying the recommended methodology using 2013 proposed data and 2015 and 2016 proposed data and section 6 presents conclusions and recommendations to the OEB on the proposed cost allocation methodology and the ETS rate. Appendix A contains the CV for Michael Roger.

Michael Roger has been an expert dealing with cost allocation, rate design and rate regulation issues for over 35 years. Michael worked for over 32 years at Ontario Hydro, Ontario Power Generation and Hydro One and spent most of his career dealing with Cost Allocation and Rate Design issues for wholesale and retail electricity customers in Ontario. He has also testified on numerous occasions at OEB proceedings on behalf of utilities and other stakeholders and also has provided expert advice to the OEB in various task forces dealing with cost allocation and rate design issues. Michael's vast experience with Cost Allocation issues was applied in developing the cost-based cost allocation methodology to develop the ETS rate and forms the basis for Elenchus recommended methodology to the OEB.

2 BACKGROUND

In Proceeding RP-1999-0044 the OEB reviewed the issue of establishing an ETS rate to be implemented at market opening.

In its Decision with Reasons dated May 26, 2000, the OEB summarized the various arguments presented by stakeholders in this proceeding on what the ETS rate should be. The OEB decided that as an interim measure, the ETS rate should be fixed at $1/MWh. This was seen as a reasonable compromise between the competing interests and proposals presented by stakeholders in the proceeding on what was described as a complex and contentious issue. Among other things, the contention emerged from what stakeholders believed should be the basis of, or purpose of, the tariff design and what ought to be an appropriate charge level to help defray the costs to domestic customers for the use of the network transmission facilities to facilitate export and wheel-through transactions.

The OEB directed that HONI monitor and report at its next main rate submission how the export market was functioning and the developments in interconnected jurisdictions and whether the ETS rate should be reviewed.

HONI retained R. J. Rudden to do a "Jurisdictional Survey of Export and Wheel-through Service Rates". The survey was filed with the OEB on June 26, 2006 and was reviewed in proceeding EB-2006-0501.

As part of EB-2006-0501, the OEB approved a stakeholder settlement agreement which maintained the ETS rate of $1/MWh. In the agreement, the Independent Electricity System Operator ("IESO") was identified as the entity responsible for undertaking a study on the appropriate ETS rate. The settlement agreement stated that:

> *"...the IESO should now be identified as entity responsible to pursue and negotiate, with neighbouring jurisdictions, acceptable reciprocal arrangements with the intention to eliminate the ETS tariff, and study the appropriate ETS tariff, including those options identified in H1/T5/S1. The IESO will seek input from market participants and interested intervenors in this proceeding and keep the parties informed of the progress of negotiations and the study. It is agreed that the IESO will make its report available to the Board upon completion which will be no later than June 1, 2009 with the results of reciprocal arrangement negotiations and the study including recommendations for an appropriate ETS tariff. Hydro One Networks Inc. remains responsible for seeking changes to its approved transmission revenues and rates and will do so as part of the 2010 transmission rate-resetting process period, following the publishing of the study."*[1]

The IESO retained Charles River Associates ("CRA") to do a quantitative analysis of the future effect of several export rate scenarios, with respect to exports and wheel-through volumes, ETS tariff revenue, and the Hourly Ontario Energy Price. The IESO's ETS study and recommendation was filed with the OEB on August 28, 2009 and was reviewed in proceeding EB-2010-0002. The IESO study reviewed four alternatives for setting the ETS rate:

1. Status Quo;
2. Equivalent average network charge;
3. Reciprocal treatment, and
4. Elimination.

[1] EB-2006-0501, Exhibit M, Tab I, Schedule 1, page 17, April 3, 2007

The IESO recommended the status quo alternative to the OEB.

In the Decision with Reasons in proceeding EB-2010-0002, page 75, the OEB concluded that an additional study was required. The OEB stated that:

> *"The Board concludes therefore that the most pressing requirement is that a genuinely comprehensive study be undertaken to identify a range of proposed rates and the pros and cons associated with each proposed rate in time for the next transmission rate application. In the Board's view, the most appropriate party to undertake this study is the IESO. In procuring the study, the IESO should circulate the terms of reference to the Applicant and the intervenors of record in this case with a view to ensuring that the resulting study will provide detailed analysis on the issues.*
>
> *This review of the terms of reference is not intended to be a strategic negotiation, but rather a technical exercise to ensure that the scope of the project is sufficiently broad and well-defined to ensure a useful and appropriate outcome. Work on this study should begin soon, to ensure completion well in advance of the time for the filing of the next transmission rates application by Hydro One."*

The OEB in the same proceeding increased the ETS rate to $2/MWh, providing the following rationale:

> *"Accordingly, the Board will direct that a change be made to the ETS rate for 2011 and 2012, increasing the rate to two dollars per MWh. In making this change the Board seeks to recognize the directional preference of the CRA study, and the absence of any particular analytical underpinning for the current rate. Subsequent panels assessing the level of this rate should not, however regard this new rate as having any particular precedential value. It is the Board's view that the new rate has more analytical support than the status quo, but that in order to arrive at a genuinely robust and valid rate, more study is required."*

In response to the OEB directive, the IESO engaged CRA to conduct a further review of the ETS rate. CRA reviewed the tariff and structures in neighbouring markets and assessed five proposed rate options against generally accepted rate making principles (consistency, simplicity, fairness and efficiency). The rate options considered were:

1. Status Quo
2. Elimination

3. Equivalent average network charge
4. Tiered rates (two alternatives)

The CRA study was filed and reviewed in proceeding EB-2012-0031.

In the IESO's submission to the OEB, the IESO indicated that none of the ETS tariff options materially impact reliability, but elimination of the tariff would best promote efficient operation of the wholesale electricity market.

As stated in the introduction in this report, the OEB directed HONI in proceeding EB-2012-0031 to develop a cost-based methodology to determine the ETS rate.

3 PRINCIPLES OF COST ALLOCATION

In order to determine cost-based rates, a cost allocation study is performed by a utility to fairly allocate shared assets and expenses to the customer groups served by the utility.

The cost allocation study is based on actual historical or forward looking test year data and reflects the operating circumstances of the utility at a particular point in time, either the last year for which actual historical information is available, or for the future test year for which rates are being established.

Traditionally three steps are followed in a cost allocation study: Functionalization, Categorization or Classification, and Allocation.

Assets and expenses that are identified with a particular customer class and that are not shared with other customer classes are "Directly" allocated to that particular customer class.

Functionalization of assets and expenses is the process of grouping assets and expenses of a similar nature, for example, generation, high voltage transmission, customer service, meter reading, etc. Hence, as a first step in a cost allocation study, the function(s) served by the assets or expenses of the utility are identified so that costs can be attributed appropriately to the identified functions.

Categorization or Classification is the process by which the functionalized assets and expenses are classified as energy, demand and/or customer related. Hence, the costs associated with each function are attributed to these categories based on the principle that the quantum of costs is reflective of the quantum of volume, system demand, or number of customers.

Allocation, which is the final step, is the process of attributing the energy, demand, and customer related assets and expenses to the customer classes being served by the utility. This allocation is accomplished by identifying allocators related to energy, demand, or customer counts that are reflective of the relationship between different measures of these cost drivers and the costs that are deemed to be caused by each customer class.

It is in this Allocation step that customers are grouped based on common characteristics, or utility asset utilization reflecting cost causality.

4 PROPOSED COST ALLOCATION METHODOLOGY

Elenchus proposes a cost allocation methodology to determine the ETS rate that is based on cost causality, is simple and follows the traditional three steps of a cost allocation methodology.

Elenchus looked at how transmission assets are being used to sell electricity, either to domestic customers of to neighbouring jurisdictions by exporters.

In Ontario generators do not pay for the use of the transmission system when they inject power into the grid in order to supply domestic electricity needs. Elenchus applied this same principle when evaluating the interconnected assets with neighbouring jurisdictions used by exporters. The interconnected assets are used to both export and import power and since generators in Ontario do not pay for the use of the transmission assets and the ETS rate is not applied to power imported into Ontario, Elenchus assumed that importers would also continue to not be charged for the use of the transmission system.

The proposed methodology considered the sale of electricity to domestic customers and neighbouring jurisdictions, not how the electricity was sourced and made available to satisfy sales.

HONI's 2013 transmission assets and revenue requirements were used in developing the recommended approach.

The proposed cost allocation methodology to determine the ETS rate reflects the interruptible nature of exports. The basis for treating exports as interruptible loads is found in the OEB's Decision with Reason in proceeding EB-2012-0031 that on page 5 states that:

> *"First, whether curtailments originate from generation issues or transmission issues, the Board agrees that export service does not receive the same priority access as domestic service. The Board accepts that the market rules treat exporters more as an interruptible load. This difference in treatment related to generation capacity has consequences for the overall service, even if export transmissions rights are technically as firm as domestic transmission rights. As a result, the Board finds that it may be appropriate for the export service to be* viewed as a separate class."

This has implications for how costs are allocated, as discussed in Section 4.3.

4.1 FUNCTIONALIZATION

In consultation with HONI, Elenchus determined that the assets and expenses associated with export activities can be found in the following HONI's transmission functions:

- Network (500 kV, 230 kV, and 115 kV lines)
- Dual Function lines (Network portion)
- Generation Line Connection
- Generation Transformation Connection
- Common (telecommunication equipment, control centre)
- Other (facilities not allocated to other functions under normal operating conditions)

These functions include dedicated and shared assets, and related expenses used by domestic and export customers.

The remaining functions used by Hydro One Transmission in determining its revenue requirement (e.g. transformation, line connection, line connection portion of dual function lines) are considered to be used only by domestic customers.

External revenues were also considered in the development of the cost allocation methodology. These revenues result mainly from secondary land use in right of ways and from providing maintenance services to other entities. These revenues are the result of using HONI's assets which have been designed to serve domestic customers only, therefore, no external revenues are proposed to be allocated to export customers.

4.2 CLASSIFICATION

Generally in costs allocation, transmission assets and expenses are classified as demand related. Transmission assets are designed to meet the maximum demand imposed by users of the system. Based on the functions evaluated, it was determined that the assets and expenses considered in the development of the ETS rate methodology are all demand related. There are no energy related or customer related assets and expenses.

4.3 ALLOCATION

In the cost allocation methodology developed to determine the ETS rate two customer groups are considered: domestic and export.

Assets dedicated to domestic customers are assets that only serve to connect Hydro One customer's load to the network.

Assets dedicated to interconnect (export) are assets that only serve to connect to another transmission utility.

Shared assets are those that serve both domestic and export customers, including assets associated with generation connection.

As export is considered to be interruptible service, no asset related costs associated with shared assets are proposed to be allocated to the export customer class.

This is considered appropriate because, as confirmed by Hydro One staff, HONI's planning of the Network transmission system does not take into consideration the capacity needed to supply export customers, transmission planning is only based on the capacity needs of domestic customers.

The assets dedicated to serve export customers have been directly allocated to the export customer class as well as the related expenses.

The OM&A expenses related to the use of shared assets have been allocated between domestic and export customers using the allocators described below.

4.3.1 Coincident Peak Allocator

In cost allocation, the allocation of demand related assets that are closest to the customer are allocated based on the non-coincident demand of the customer. The required assets are sized reflecting the maximum customer electricity demand.

Further away from the customer and closer to the generation system, it is the aggregate electricity demand of all customers, and not the sum of the individual customer demands, that determines the size of the facilities required to satisfy customers' electricity needs. In cost allocation, when apportioning assets and expenses further away from the customer (e.g. generation, transmission) and closer to the generation of electricity, it is the coincident demand that is used as an allocator, reflecting the criteria used to size the required assets.

Using 2010, 2011 and 2012 actual hourly load data for domestic and export customers from the IESO, coincident peak ("CP") allocators were developed.

Coincident peak is the hourly demand of domestic and export customers at the hour of maximum demand in the Ontario electricity system.

1 CP is the demand for each customer class at the hour of maximum system demand in a year. 12 CP is the average of the demand for each customer class at the hour of each month's maximum system demand.

1 CP or 12 CP are used by utilities in cost allocation studies to apportion generation and transmission costs amongst customer groups.

The following table includes the values developed for coincident peak.

Table 1

Coincident peak 2010 to 2012

	2010			2011			2012			Average		
	Export	Domestic	Total	Export	Domestic	Total	Export	Domestic	Total	Export	Domestic	Total
1CP	2,687	25,048	27,735	2,549	25,450	27,999	2,179	24,636	26,815	2,472	25,045	27,516
12CP	30,897	255,485	286,382	31,343	250,819	282,161	28,164	251,842	280,006	30,134	252,715	282,850

The 1 CP and 12 CP percentage allocators using 2010 to 2012 data are show in the table below

Table 2

Coincident peak %

	2012 Data			Average 2010 – 2012 Data		
Coincident Peak	Total	Domestic	Export	Total	Domestic	Export
1 cp	100.00	91.87	8.13	100.00	91.02	8.98
12 cp	100.00	89.94	10.06	100.00	89.35	10.65

The 1 CP and 12 CP values for the period 2011 to 2013 using actual hourly data are shown in the table below.

Table 3

Coincident peak 2011 to 2013

	2,011			2,012			2,013			Average		
	Export	Domestic	Total	Export	Domestic	Total	Export	Domestic	Total	Export	Domestic	Total
1CP	2,549	25,450	27,999	2,179	24,636	26,815	1,952	24,927	26,879	2,227	25,004	27,231
12CP	31,343	250,819	282,161	28,164	251,842	280,006	30,240	255,417	285,657	29,916	252,692	282,608

The 1 CP and 12 CP percentage allocators using 2011 to 2013 data are show in the table below

Table 4

Coincident peak %

	2013 Data			Average 2011 – 2013 Data		
Coincident Peak	Total	Domestic	Export	Total	Domestic	Export
1 cp	100.00	92.74	7.26	100.00	91.82	8.18
12 cp	100.00	89.41	10.59	100.00	89.41	10.59

Elenchus recommends that 12 CP should be used to allocate shared assets between domestic and export customers using the last year for which information is available.

When system loads are relatively flat and do not show a pronounced yearly peak, 12 CP is usually used by utilities to allocate demand related assets and expenses. In instances where there is a significant yearly peak compared to other peaks in the year, that is a very peaky load profile with low load factor, then 1 CP would be used to allocate demand related assets and expenses.

In Proceeding RP-1999-0044, the OEB reviewed allocators that could be used to recover Network assets and expenses and recommended against the use of non-

coincident peak and settled on the use of coincident peak. With respect to using 1 CP, in paragraph 3.4.27 of the OEB Decision it states that:

> *"A rate design aimed at customer demand reduction during the system's coincident peak hours would meet the test of economic efficiency, but only if the network transmission system is generally capacity-constrained. This is not the case for the OHNC [Hydro One] network transmission system either today or in the foreseeable future."*

12 CP is used by HONI in apportioning assets and expenses when allocating Dual Function Line assets, (Proceeding EB-2012-0031, Exhibit G1, Tab 2, Schedule 1, pages 110-111).

4.3.2 Composite Allocators

The asset functions identified in section 4.1 were apportioned between domestic and export customers using the 12 CP allocator based on 2012 actual hourly data in order to develop composite allocators used to allocate shared OM&A expenses to domestic and export customer classes.

The OM&A expenses related to the identified shared functions were allocated in the cost allocation methodology to domestic and export customers using Net Shared Assets as composite allocators. Table 5 includes the percentage allocation of the composite allocators to the two customer classes based on 12 CP.

Table 5

Composite Allocators using 2012 actual hourly data

	Total	Domestic	Export
Net Shared Assets	**100.00%**	**92.89%**	**7.11%**
Dedicated to Domestic	**100.00%**	**100.00%**	**0.00%**
Dedicated to Interconnect	**100.00%**	**0.00%**	**100.00%**

Using 2013 actual domestic and export hourly data, the composite allocators are included in the following tables based on 12 CP and the 2015 and 2016 financial data.

Table 6

Composite Allocators using 2013 actual hourly data for 2015

	Total	Domestic	Export
Net Shared Assets	100.00%	92.74%	7.26%
Dedicated to Domestic	100.00%	100.00%	0.00%
Dedicated to Interconnect	100.00%	0.00%	100.00%

Table 7

Composite Allocators using 2013 actual hourly data for 2016

	Total	Domestic	Export
Net Shared Assets	100.00%	92.79%	7.21%
Dedicated to Domestic	100.00%	100.00%	0.00%
Dedicated to Interconnect	100.00%	0.00%	100.00%

5 ETS RATE RESULTS

The results of applying the proposed cost allocation methodology to develop a cost-based ETS rate are shown below.

The proposed cost allocation methodology was developed using 2012 actual hourly load data and 2013 proposed HONI financial data as submitted in proceeding EB-2012-0031.

The model was run again with 2013 actual hourly load data and the proposed 2015 and 2016 financial data being submitted by HONI at its rate submission.

5.1 Using 2012 Load data and 2013 HONI Proposed Financial Data

5.1.1 Base Case ETS rate

The base case result for developing the ETS rate using the proposed cost allocation methodology is based on the following assumptions:

- Shared Assets are apportioned using 2012 actual hourly data between domestic and export customers using the 12 Coincident Peak method in order to develop the composite allocators to be used to allocate shared expenses
- Only dedicated assets used to serve export customers and related expenses are being allocated to export customers
- No asset related costs associated with shared assets are allocated to export customers
- Shared OM&A expenses are allocated between domestic and export customers based on composite allocator of Net Shared Assets
- No External revenue credit is allocated to export customers
- HONI's proposed 2013 data, (Assets and Expenses), as submitted in proceeding EB-2012-0031 were used to develop the ETS rate based on the proposed cost allocation model.

Using HONI's export sales forecast for 2013, the resulting ETS rate is $1.77/MWh.

5.1.2 ETS Rate Including Other Transmitters' Revenue Requirement

The hourly data used from the IESO reflect all transmission electricity sales in Ontario, not just Hydro One's, while the financial assets and expense data used in developing the cost allocation methodology reflects only Hydro One's data. Marking-up the calculated ETS rate to reflect other transmitters approved Network revenue requirement would result in consistency between the sales data and the financial data, both of which would reflect all transmitters in Ontario.

As seen in the 2014 Uniform Transmission Rates, HONI's Network function revenue requirement is $882.9 million. The revenue requirement for all Ontario transmitters is $912.8 million, or 3.4% higher than HONI's revenue requirement.

Increasing the ETS rate of $1.77/MWh by 3.4%, results in an ETS rate of $1.83/MWh. This higher ETS rate would take into account the revenue requirement of all transmitters in Ontario.

5.1.3 SCENARIOS

The following scenarios were run in order to determine the results sensitivity of the proposed cost allocation methodology to various assumptions.

Table 8 Scenarios (2012 load data)

Scenario	Description	ETS rate ($/MWh)[2]
1	Same as Base case, but using 12 CP average of 3 years (2010 to 2012)	1.82
2	Same as Base case, but using 1 CP (2012)	1.59
3	Same as Base case, but using 1 CP average of 3 years (2010 to 2012)	1.67
4	Same as Base case, but allocation $0.16M External Revenue credit to Export customers	1.76
5	Allocating only shared OM&A costs to Export customers, no dedicated export assets allocated to Export[3]	1.22
6	Allocating to Export customers same Network function assets and expenses as Domestic customers, $1.43M External Revenue credit, using 12 CP (2012)[4]	4.73

5.2 USING 2013 LOAD DATA AND 2015 AND 2016 HONI PROPOSED FINANCIAL DATA

5.2.1 BASE CASE ETS RATE

The same assumptions described in section 5.1.2 are used in developing the ETS rate:

- Shared Assets are apportioned using 2013 actual hourly data between domestic and export customers using the 12 Coincident Peak method in order to develop

[2] Using HONI 2013 export sales forecast
[3] Assuming exporters do not pay for dedicated assets and related expenses
[4] Assuming export is treated as firm load, similar to domestic load

the composite allocators to be used to allocate shared expenses to domestic and export customer classes

- Only dedicated assets used to serve export customers and related expenses are being allocated to export customers
- No asset related costs associated with shared assets are allocated to export customers
- Shared OM&A expenses are allocated between domestic and export customers based on composite allocator of Net Shared Assets
- No External revenue credit is allocated to export customers
- HONI's proposed 2015 and 2016 data, (Assets and Expenses), as submitted in this proceeding are used to develop the ETS rate based on the proposed cost allocation model.

Using HONI's 2015 and 2016 export sales forecast, the resulting ETS rate is $1.63/MWh for 2015 and $1.62/MWh for 2016.

5.2.2 ETS Rate Including Other Transmitters' Revenue Requirement

In HONI's proposed 2015 and 2016 Uniform Transmission Rates, HONI's Network function revenue requirements are $933.6 million and $972.0 million respectively. The revenue requirements for all Ontario transmitters are $963.0 million, and $1,001.3 million for 2015 and 2016, or 3.2% and 3.0% higher than HONI's proposed revenue requirements.

Increasing the 2015 ETS rate of $1.63/MWh by 3.2%, and the 2016 ETS rate of $1.62/MWh by 3.0% results in ETS rate of $1.68/MWh for 2015 and $1.67/MWh for 2016. This higher ETS rates would take into account the revenue requirements of all transmitters in Ontario.

5.2.3 Scenarios

The following scenarios were run in order to determine the results sensitivity of the proposed cost allocation methodology to various assumptions.

Table 9 Scenarios (2013 load data)

Scenario	Description	ETS rate 2015 ($/MWh)[5]	ETS rate 2016 ($/MWh)[6]
1	Same as Base case, but using 12 CP average of 3 years (2011 to 2013)	1.63	1.62
2	Same as Base case, but using 1 CP (2013)	1.34	1.33
3	Same as Base case, but using 1 CP average of 3 years (2011 to 2013)	1.42	1.41
4	Same as Base case, but allocation $0.12M External Revenue credit to Export customers	1.62	1.61
5	Allocating only shared OM&A costs to Export customers, no dedicated assets allocated to Export [7]	1.15	1.13
6	Allocating to Export customers same Network function assets and expenses as Domestic customers, $1.3M External Revenue credit, using 12 CP (2013)[8]	4.84	4.88

6 CONCLUSIONS AND RECOMMENDED METHODOLOGY

The results of the proposed cost allocation methodology to develop a cost-based ETS rate and the sensitivity scenarios run using 2010 to 2012 load data show a Base Case result of $1.77/MWh and a range for the ETS rate between $1.22/MWh to $1.82/MWh

[5] Using HONI 2015 export sales forecast
[6] Using HONI 2016 export sales forecast
[7] Assuming exporters do not pay for dedicated assets and related expenses
[8] Assuming export is treated as firm load, similar to domestic load

for scenarios 1 to 5. The financial data is based on HONI's 2013 proposed data and excludes other transmitter's revenue requirement.

Using hourly load data for the period 2011 to 2013 and financial data for HONI as proposed for 2015 and 2016, the Base Case result for the ETS rate for 2015 is $1.63/MWh and for 2016 is $1.62/MWh. The range for the ETS rate is between $1.13/MWh to $1.63/MWh for scenarios1 to 5. The financial data excludes other transmitter's revenue requirement.

It is Elenchus' recommendation that the cost allocation methodology to be used to develop the ETS rate should be based on:

- Using the last year of actual hourly data for domestic and export customers. Forecast domestic and export hourly data is not available either from HONI or IESO,
- 12 CP should be the allocator used in apportioning assets between domestic and export customers in order to develop composite allocators to allocate shared expenses.
- Only dedicated assets used to serve export customers and related expenses should be allocated to the export customer class,
- No asset related costs associated with shared assets should be allocated to export customers
- Expenses related to the use of shared assets should be allocated to export customers using composite assets as allocator,
- No External revenues should be allocated to the export customer class, and
- The ETS rate should be based on HONI's OEB approved Network revenue requirement, as used in determining the Uniform Transmission rate, marked up to include other transmitters' approved revenue requirement as reflected in the Uniform Transmission Rates.

The proposed cost allocation methodology provides a supporting basis for determining the ETS rate based on cost causality principles. Given the range of values calculated using 2013, 2015, 2016 data and the related scenario sensitivity results, a value

between $1.7/MWh and $1.8/MWh for the ETS rate can be considered to be cost-based.

Based on the proposed 2015 and 2016 HONI financial data, Elenchus recommends an ETS rate of $1.7 MWh be implemented for 2015 and that the ETS rate be maintained for at least 2 years to provide stability in determining the rate.

APPENDIX A - CV MICHAEL ROGER

MICHAEL J. ROGER

34 King Street East, Suite 600 | Toronto, ON M5C 2X8 | 905 731 9322 | mroger@elenchus.ca

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ASSOCIATE, RATES AND REGULATION

Michael has over 35 years of experience in the electricity industry dealing in areas of finance, cost allocation, rate design and regulatory environment. Michael has been an expert witness at numerous Ontario Energy Board proceedings and has participated in task forces dealing with his areas of expertise. Michael is a leader and team player that gets things done and gets along well with colleagues.

PROFESSIONAL OVERVIEW

Elenchus — 2010 - Present

Associate Consultant, Rates & Regulation

- Provide guidance on the Regulatory environment in Ontario for distributors, with particular emphasis in electricity rates in Ontario and the regulatory review and approval process for cost allocation and rate design. Some of the clients that Michael provides advice include: Hydro Quebec Energy Marketing Inc., GTAA, Ontario Energy Board, City of Hamilton, Hydro One Transmission, Powerstream, Hydro Ottawa, Veridian, APPrO and Hydro 2000.

Hydro One Networks Inc. — 2002 - 2010

Manager, Pricing, Regulatory Affairs, Corporate and Regulatory Affairs

- In charge of Distribution and Transmission pricing for directly connected customers to Hydro One's Distribution system, embedded distributors and customers connected to Hydro One's Transmission system. Determine prices charged to customers that conform to guidelines and principles established by the Ontario Energy Board, (OEB). Provide expert testimony at OEB Hearings on behalf of Hydro One in the areas of Cost Allocation and Rate Design. Keep up to date on Cost Allocation and Rate Design issues in the industry. Ensure deliverables are of high quality, defensible and meet all deadlines.

Keep staff focused and motivated and work as a team member of the Regulatory Affairs function. Provide support to other units as necessary.

Ontario Power Generation Inc. 1999 - 2002

Manager, Management Reporting and Decision Support, Corporate Finance

- In charge of producing weekly, monthly, quarterly and annual internal financial reporting products. Input to and coordination of senior management reporting and performance assessment activities. Expert line of business knowledge in support of financial and business planning processes. Coordination, execution of review, and assessment of business plans, business cases and proposals of an operational nature. Provide support to other units as necessary. Work as a team member of the Corporate Finance function.

Ontario Hydro 1998 - 1999

Acting Director, Financial Planning and Reporting, Corporate Finance

- In charge of the day to day operation of the division supporting the requirements of Ontario Hydro's Board of Directors, Chairman, President and CEO, and the Chief Financial Officer, to enable them to perform their due diligence role in running the company. Interact with business units to exchange financial information.

Financial Advisor, Financial Planning and Reporting , Corporate Finance 1997

- Responsible for co-ordinating Retail, Transmission, and Central Market Operation divisions' support of Corporate Finance function of Ontario Hydro to ensure financial information consistency between business units and Corporate Office, review business units compliance with corporate strategy. Provide advice to Chief Financial Officer and Vice President of Finance on business unit issues subject to review by Corporate Officers.
- Participate or lead task team dealing with issues being evaluated in the company. Supervise professional staff supporting the function. Co-ordinate efforts with advisors for GENCO and Corporate Function divisions to ensure consistent treatment throughout the company.

Section Head, Pricing Implementation, Pricing 1986 - 1997

- In charge of pricing experiments, evaluation of marginal costs based prices, cost-of-service studies for municipal utilities, analysis and comparison of prices in the electric industry, rate structure reform evaluation, analysis of cost of servicing individual

customers and support the cost allocation process used to determine prices to end users.

- The section was also responsible for the derivation of wholesale prices charged to Municipal Electric Utilities and retail prices for Direct Industrial customers, preparation of Board Memos presented to Ontario Hydro's Board of Directors and support the department's involvement at the Ontario Energy Board Hearings by providing expert witness testimony.

Section Head, (acting), Power Costing, Financial Planning & Reporting, Corporate Finance — 1994 - 1995

- Responsible for the allocation of Ontario Hydro's costs among its customer groups and ensure that costs are tracked properly and are used to bill customers. Maintain the computer models used for cost allocation and update the models to reflect the structural changes at Ontario Hydro. Participate at the Ontario Energy Board Hearings providing support and expert testimony on the proposed cost allocation and rates. Provide cost allocation expertise to other functions in the company.

Additional Duties — 1991

- Manager (acting) Rate Structures Department.
- Review of utilities' rates and finances for regulatory approval.
- Consultant. Sent by Ontario Hydro International to Estonia to provide consulting services on cost allocation and rate design issues to the country's electric company.

Analyst, Rates — 1983 - 1986

- In charge of evaluating different marketing strategies to provide alternatives to customers for the efficient use of electricity. Co-ordinate and supervise efforts of a work group set up to develop a cost of service study methodology recommended for implementation by Municipal Electric Utilities and Ontario Hydro's Rural Retail System. Provide support data to Ontario Hydro's annual Rate Submission to the Ontario Energy Board. Participate in various studies analysing cost allocation areas and financial aspects of the company.

Forecasting Analyst, Financial Forecasts — 1980 - 1983

- Evaluating cost data related to electricity production by nuclear plants and preparing short term forecasts of costs used by the company. Maintain and improve computer models used to analyse the data.

- Review Ontario Hydro's forecast of customer revenues, report actual monthly, quarterly and yearly results and explain variances from budget. Support the development of new computerized models to assist in the short-term forecast of revenues.

Project Development Analyst, Financial Forecasts **1979 - 1980**

- In charge of developing computerized financial models used by forecasting analysts planning Ontario Hydro's short term revenue and cost forecasts and also in the preparation of Statement of Operations and Balance Sheet for the Corporation¬.

Assistant Engineer – Reliability Statics, Hydroelectric Generations Services **1978 - 1979**

- In charge of analysing statistical data related to hydroelectric generating stations and producing periodic report on plants' performance.

ACADEMIC ACHIEVEMENTS

1977	Master of Business Administration, University of Toronto. Specialized in Management Science, Data Processing and Finance. Teaching Assistant in Statistics.
1975	Bachelor of Science in Industrial and Management Engineering, Technion, Israel Institute of Technology, Haifa, Israel.